

Application Serial No. 10/763,990
Amendment dated December 19, 2005
Reply to Office Action dated September 21, 2005

Amendments to the Specification:

Please replace paragraph [0046] with the following amended paragraph:

[0046] The modular subsystems which are to be coupled with microcontroller 30 and which are selectively included in control system 10 generally include electrical sensor circuits and control interfaces. In one exemplary embodiment, electrical sensor circuits include real power sensor circuit 50, transient current sensor circuit 60, RMS run current sensor circuit 70, and RMS voltage sensor circuit 80. Other electrical sensor circuits may include, for example, average current, peak current, temperature, and pressure. Each electrical sensor circuit receives a voltage or current signal associated with HVACR system 1, for example associated with a compressor. Microcontroller 30 receives a conditioned output signal proportional to the measured electrical signal from each electrical sensor circuit.

Please replace paragraph [0058] with the following amended paragraph:

[0058] Microcontroller 30 (Fig. 1) of control system 10 controls HVACR system 201 based on established mode selection, operating parameter limits and the measured parameters. For example, control system 10 may control reversing valve 232, hot water valve 244, and fan 248, or alternatively, heater 250, fan 252, and damper 254 if the inside air temperature is below the desired limit. Similarly, control system 10 may control reversing valve 232, compressor 230, and fans 248 and 252 to provide heating or cooling from the refrigeration cycle of evaporator ~~[[232]]~~ 236, capillary tube 238, and condenser 240 upon the inside air temperature being above the selected limit.

Please replace paragraph [0063] with the following amended paragraph:

[0063] Control system 10 may also include RMS run sensor circuit 70 (Fig. 1) for detecting the operating current of compressor 230 during normal operation, not during transient startup or shutdown of compressor 230. Various system failures may be detected by monitoring the

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current, for example, the failure of one of fans 248 and 252 may cause compressor 230 to draw additional current because of the loss of efficiency of HVACR system 201. A failed or damaged compressor motor may also cause an increased current. A loss of refrigerant may be detected by measuring a decrease in compressor current for a given voltage. Thus, by monitoring the current provided to compressor 230 during normal running, microcontroller 30 may detect [[an]] and report system problems and shut down HVACR system 201 if necessary to avoid damage to system components. Advantageously, because RMS run current sensor circuit 70 is provided separately from very high current sensor 60 and is used for measuring lower current levels, a higher resolution measurement than is used for very high current sensor 60 may be provided to microcontroller 30.